USGS
science for a changing world

2010 Minerals Yearbook

GREECE [ADVANCE RELEASE]

U.S. Department of the Interior
U.S. Geological Survey

June 2012

The Mineral Industry of Greece

By Harold R. Newman

Mining has been a part of Greek civilization since before 1,000 B.C when Greeks first began extracting industrial minerals and metals for use. In 2010, the mining industry was regulated by the Mining Code, Legislative Decree 210/1973, as amended by a number of laws and ordinances on technical and procedural issues, such as law No. 669/1977 on the exploitation of ornamental rocks and industrial minerals; law No. 428/84 as amended by law No. 2115/93 on the exploitation of aggregates; and the Regulation on Mining and Quarrying Activities including the Health and Safety Regulation on Mining and Quarrying. Greece's mineral industry was also subject to the European Union (EU) Environmental Impact Assessment Directives, and the EU Mining Waste Directive 2006/21/EC (Hellenic Republic Ministry of Environment, Energy, and Climate Change, 2010, p. 16).

Geologic studies in Greece were done primarily by the Institute of Geology and Mining Exploration (IGME). The IGME studies provide general information on deposit size and location and the quality of various minerals. Most exploration activity was focused on northern Greece, which was thought to contain a significant amount of exploitable minerals (Institute of Geology and Mineral Exploration, 2010).

Major fiscal problems that began to be evident in 2009 continued in 2010 as lower economic growth and higher interest rates resulted in a financial crisis in the country. In 2010, the debate was centered around whether the Government would default on its sovereign debt. In May, the Greek Parliament, euro area countries, and the International Monetary Fund approved a $145 billion financial bailout package in return for which Greece was to implement strict fiscal austerity measures and structural reforms (U.S. Department of State, 2012). The Government stated that the austerity measures would be implemented to reduce the deficit to 3% of the gross domestic product (GDP) by the end of 2013 (down from 12.7% at yearend 2009) and control the national debt, which was at 113% of the GDP in 2010. The Stability and Convergence Pact, also known as the Maastricht Treaty of 1992, called for the debt-to-GDP ratio not to exceed 60%. The Government stated that, given time, it would succeed in getting its fiscal affairs in order (Mizan, 2010).

Minerals in the National Economy

The mineral industry produced and (or) processed industrial minerals, metals, and mineral fuels. Companies in Greece exported about two-thirds of their production. During the past 20 years, the significance of the mineral industry to the Greek economy had gradually lessened, and by 2010, its financial effect on the economy was small. From the standpoint of domestic economic development, however, mineral industry activities have traditionally been an important segment of Greece's industry. Most of the Greek companies that dealt in metal fabrication, mining of minerals, and refined metal production, or processing were well established and had a strong export orientation. Greek merchandise exports in 2010 totaled $21.4 billion, of which fuels and mining output accounted for $20.7 million. Imports totaled $63.2 billion, of which fuels and mining output accounted for $26.9 million (World Trade Organization, 2011).

Production

Greece was a global supplier of several key industrial minerals and a significant producer of bauxite, caustic-calcined magnesium, mined nickel, and screened perlite in the EU. Production of mineral commodities in Greece was closely tied to the export market. In 2010, Greece was the world's leading producer of perlite (32%) and the world's fourth ranked producer of pumice (7%) after Turkey, Italy, and Iran. It also was estimated to have produced about 9% of the world's bentonite and 1% of the world's bauxite. Bauxite, which is the raw material needed for aluminum production, and lignite, which is used as a fuel in powerplants, were the two most abundant minerals in Greece. In terms of the value of production, bauxite was the most important of Greece's mineral commodities (Bolen, 2011; Bray, 2011; Virta, 2011).

The country's mineral production levels were more or less the same as in 2010 except for increases in the production of alumina and mined nickel and decreases in the production of crude steel production and petroleum (table 1). These changes were mostly in response to the changes in demand and to the country's and companies' economic situations.

Structure of the Mineral Industry

The major mineral commodities and the companies that produced them in 2010 are listed in table 2. Nearly all companies were privately owned; Government ownership was limited to the mineral fuels sector.

Commodity Review

Metals

Bauxite and Alumina and Aluminum.—In 2010, Greece was a leading bauxite producer in the EU, and S&B Industrial Minerals S.A. (S&B) controlled most of the significant bauxite reserves in Greece. The major bauxite deposits are located in central Greece within the Parnassos-Ghiona geotectonic zone and on Evoia Island. Greece's estimated 100 million metric tons (Mt) of bauxite reserves were of boehmitic and diasporic type (S&B Industrial Minerals S.A., 2010).

Delphi-Distomon S.A. was the second ranked bauxite producer in Greece after S&B and had an output of 800,000 metric tons per year (t/yr) exclusively from underground sites. The company's

mines were located in the areas of Amfissa and Distomon (Delphi-Distomon S.A., 2010).

Aluminium de Grèce S.A. produced alumina from bauxite and aluminum from alumina through electrolysis. The company's industrial plant had the capacity to produce 800,000 t/yr of alumina and 165,000 t/yr of aluminum. The aluminum was marketed to automobile manufacturers and manufacturers of building materials and packaging (Aluminium de Grèce S.A., 2010).

Gold.—Cape Lambert Resources Ltd. of Australia's Sappes gold project is located in northeastern Greece about 30 km northwest of the port city of Alexandroupolis. The Sappes project is located on a 20.1-square-kilometer lease and included the development of the underground Viper deposit and an open pit at the St. Demetrios deposit. A feasibility study in 2006 proposed production of about 2,835 kilograms per year of gold in dore and flotation concentrate during a period of 5 years. The estimated total resource at the Viper deposit was 0.99 Mt at a grade of 21.4 grams per metric ton (g/t) gold (Cape Lambert Resources Ltd., 2010).

Hellas Gold S.A., which was a subsidiary of European Goldfields Ltd. of Canada, owned three gold and base-metal deposits in northern Greece. These were the Olympias deposit, which was a polymetallic deposit that contained gold, lead, silver, and zinc; the Skouries gold deposit; and the Stratoni deposit, which was a polymetallic deposit. These deposits were part of the Kassandra property in northern Greece. Hellas Gold completed selling gold concentrates from an existing stockpile at Olympias and had applied for the relevant permits to re-treat tailings and resume underground mining at the property as soon as the necessary permits are awarded (European Goldfields Ltd., 2010a).

The Skouries gold project is located 35 kilometers (km) from Stratoni in northern Greece and was a typical porphyry deposit that formed a nearly vertical pipe. The project was in the basic engineering and construction stage. Skouries would employ a simple metallurgical process and would produce clean concentrate using flotation as well as dore from the gravity circuit. The mine's estimated proven reserves were 77.5 Mt grading 0.87 g/t gold, and its estimated probable reserves were 68.7 Mt grading 0.83 g/t gold (European Goldfields Ltd., 2010b).

Lead, Silver, and Zinc.—The tectonic structure of Greece consists of elongated tecto-magnetic terrains that represent successive episodes of subduction. One such terrain in northern Greece is the Serbo-Macedonian massif, which hosts the Stratoni deposit. The Stratoni mineralization was classified as lead-silver-zinc carbonate replacement type mineralization, with galena, pyrite, and sphalerite as the main ore minerals. The Stratoni Mine was a producing lead-silver-zinc operation. Resources at the Stratoni Mine were contained within the Mavres Petres ore body, which had estimated proven and possible reserves of 2.3 Mt grading 9.9% zinc, 7.7% lead, and 203 g/t silver. The mine, which had an expected life of 10 years from the commencement of mining in 2005, produced a lead-silver concentrate and a zinc concentrate by a conventional underground drift-and-fill method. This method was ideally suited to this high-grade ore body as it minimizes dilution, maximizes recovery of ore, and allows the mine headings to change direction with the changing ore geometry (European Goldfields Ltd., 2010c).

Nickel.—Nickel laterite mineral resources were estimated to be about 250 Mt and were spread across three areas: central Euboea, Neo Kokkino, and northern Greece in the area of Kastona. Larco G.M.M. S.A. (Larco), which was a leading producer of nickel in Europe and the only European user of domestic nickel ores, mined open pit and underground sedimentary-type nickel laterite at its Agios and Evia Mines near Larymna, and smelted the material at its plant in Larymna (Larco G.M.M. S.A., 2010).

Industrial Minerals

Cement.—Titan Cement Co. S.A. was a significant cement producer. Titan's four plants produced a total of about 6 Mt/yr and commanded a 40% market share. Titan was engaged in an extensive investment program and had become a diversified and vertically integrated company as a result of adding ready-mix concrete production and cement products, including cement blocks and mortar, to its production capabilities (Titan Cement Company S.A., 2010).

Magnesium Compounds.—Grecian Magnesite S.A. announced that it had begun reprocessing old stockpiles in 2010 with the installation of a new secondary processing line. The secondary mineral processing line for the beneficiation of the fines [4 millimeter (mm) to 18 mm run-of-mill material] allowed the use of the old stockpiles and provided low-cost raw material for the production of caustic calcined magnesia, mainly for agricultural and construction applications (Industrial Minerals, 2010).

Mineral Fuels

Coal.—In 2010, the predominant fuel used in electricity generation in Greece was lignite, and Public Power Corp. (PPC) was Greece's major producer of lignite. PPC's leading lignite mines in Megaloplis and Ptolemais provided lignite for power generation. PPC's lignite-powered powerplants represented 42% of the country's total installed capacity and generated about 56% of the country's electrical energy. Greece had an estimated 3,900 Mt of coal reserves, or 0.47% of the world's total reserves. In terms of lignite production, Greece ranked second in the EU and sixth worldwide (MBendi Information (Pty) Services, 2010).

Natural Gas.—Production of natural gas was negligible owing to Greece's limited natural gas reserves. Its Mediterranean location, however, made it conveniently close to several important producing regions, such as the Caspian Sea area, the Middle East, and North Africa, which could help meet its energy requirements.

Petroleum.—Energean Oil & Gas S.A. (formerly known as Aegean Energy S.A.), was expanding its investments in petroleum exploration projects offshore Greece. Energean was the only natural gas and petroleum exploration and production company in Greece. The company was operating in the South Kavala natural gas field and the Prinos offshore petroleum

field, where it held a 100% interest. At yearend 2010, drilling equipment had arrived at the Prinos field, and drilling was scheduled for the second half of 2011. Energean estimated that the Prinos Epsilon field contained about 50 million barrels of recoverable petroleum. Energean also reported that scientific and economic conferences had presented figures that estimated about 22 billion barrels (Gbbl) in the Ionian Sea off the coast of western Greece and about 4 Gbbl in the northern Aegean Sea. It was estimated that about 10% of these reserves could be exploited. Exploration for petroleum in the southern Aegean Sea and the Cretan Sea had not yet been done as of 2010 (Michaletos, 2010).

Outlook

Greece's economic outlook for 2011 is not expected to improve greatly, even though the Government is expected to continue its efforts to reform the economy and address the serious debt issue. Greece is expected to remain a major supplier of bauxite in the international market. The industrial minerals sector will continue to be a small but important part of the country's revenue earnings. Development of several mineral resource projects in the northern part of Greece are likely to continue, along with mineral fuel exploration efforts offshore Greece. The Government is expected to be involved in planning investment programs to improve the existing installations and to lower operating costs to encourage development in the mineral resource sector.

References Cited

Aluminium de Grèce S.A., 2010, Introduction—History: Aluminium de Grèce S.A. (Accessed February 11, 2012, at http://www.alhellas.com/default.asp?site ID=3&pageID=2.)

Bolen, W.P., 2011, Perlite: U. S. Geological Survey Mineral Commodity Summaries 2011, p. 116–117.

Bray, E.L., 2011, Bauxite and alumina: U. S. Geological Survey Mineral Commodity Summaries 2011, p. 26–27.

Cape Lambert Resources Ltd., 2010, Sappes gold: Cape Lambert Resources Ltd. (Accessed February 11, 2012, at http://www.capelambert.com.au/irm/content/projects_sappes.html.)

Delphi-Distomon S.A., 2010, Bauxite: Delphi-Distomon S.A. (Accessed March 13, 2012, at http://www.alhellas.com/default.asp?siteID=16&langID=2.)

European Goldfields Ltd., 2010a, Olympias project: European Gold Fields Ltd. (Accessed February 11, 2012, at http://www.egoldfields.com/egoldfields/en/operationsprojects/greece/olympias.)

European Goldfields Ltd., 2010b, Skouries project: European Gold Fields Ltd. (Accessed February 11, 2012, at http://www.egoldfields.com/egoldfields/en/operationsprojects/greece/skouries.)

European Gold Fields Ltd., 2010c, Stratoni summary: European Gold Fields Ltd. (Accessed February 11, 2012, at http://www.egoldfields.com/egoldfields/uploads/dlibrary/documents/StratoniTechnicalReportSept2110.pdf.)

Hellenic Republic Ministry of Environment, Energy, and Climate Change, 2010, Mining, chap. 2 *of* Country profile—Greece—National reporting to the eighteenth and nineteenth sessions of the Commission on Sustainable Development of the United Nations (UN-CSD 18/19): New York, New York, United Nations, p. 14–25. (Accessed February 9, 2012, at http://www.un.org/esa/dsd/dsd_aofw_ni/ni_pdfs/NationalReports/greece/Greece-CSD18-19_Chapter_II-Mining.pdf.)

Industrial Minerals, 2010, Magnesia blasts back: Industrial Minerals, no. 516, September, p. 37.

Institute of Geology and Mineral Exploration, 2010, Historical overview: Institute of Geology and Mineral Exploration. (Accessed March 13, 2012, at http://old.igme.gr/enhisto.htm.)

Larco G.M.M. S.A., 2010, Our products—Nickel: Larco G.M.M. S.A. (Accessed February 11, 2012, at http://www.larco.gr/nickel.php.)

Mbendi Information Services (Pty) Ltd., 2010, Coal mining in Greece: Mbendi Information Services (Pty) Ltd. (Accessed February 11, 2012, at http://www.mbendi.com/indy/ming/coal/eu/gr/p0005.htm.)

Michaletos, Ioannis, 2010, Greek companies step up offshore oil exploration, large reserves possible: Balkananalysis.com. (Accessed February 8, 2012, at http://www.balkananalysis.com/greece/2010/12/08/greek-companies-step-up-offshore-oil-exploration-lage-reserves-possible-greece.)

Mizan, Alexander, 2010, The financial crisis—A threat for Greece's national security: American Hellenic Council, January 28. (Accessed September 21, 2010, at http://www.americanhellenic.org/articles/the_financial_crisis_threat_to_greece_national_security.php.)

S&B Industrial Minerals S.A., 2010, Bauxite: S&B Industrial Minerals S.A. (Accessed February 11, 2012, at http://www.sandb.com/our-business/solutions-products/mineral-products/bauxite/.)

Titan Cement Company S.A., 2010, Press releases—News: Titan Group. (Accessed February 11, 2012, at http://www.titan.gr/en/news-media/press-releases-news/?entryid=215.)

U.S. Department of State, 2012, Greece: U.S. Department of State background note, March 22. (Accessed June 6, 2012, at http://www.state.gov/r/pa/ei/bgn/3395.htm.)

Virta, R.L., 2011, Clays: U. S. Geological Survey Mineral Commodity Summaries 2011, p. 44–45.

World Trade Organization, 2011, Greece—Country profile: World Trade Organization. (Accessed February 9, 2012, at http://www.wto.org/CountryProfiles/WSDBCCountryPFView.aspx?Country=GR&Language=S.)

TABLE 1

GREECE: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity[2]		2006	2007	2008	2009	2010[e]
METALS						
Aluminum:						
Bauxite		2,162,900	2,125,900	2,176,300	1,935,000	2,000,000
Alumina, Al_2O_3		775,000 [e]	761,746 [r]	771,769	718,797	725,000
Metal:						
Primary		164,800	166,300	162,339 [r]	134,737	130,000
Secondary[e]		3,000	3,000	3,000	3,000	3,000
Chromite, ore, crude		1,450 [3]	1,400	1,400	1,400	1,400
Iron and steel:						
Iron ore and concentrate, nickeliferous, Fe content[e]		575,000	575,000	570,000	560,000	560,000
Metal:						
Steel, crude	thousand metric tons	2,416	2,554	2,477	2,082	1,839 [3]
Ferroalloys, ferronickel, gross weight		100,000 [e]	93,300 [r]	83,200 [r]	41,300 [r]	42,000
Lead:[e]						
Mine output, Pb content		10,500	15,000	23,314 [3]	17,027 [3]	18,000
Metal, secondary	thousand metric tons	6	11	11	10	10
Manganese:[e]						
Ore, crude:						
Gross weight		100	100	100	100	100
Mn content		15	15	15	15	15
Concentrate:						
Gross weight		20	20	20	20	20
Mn content		15	15	15	15	15
Nickel:						
Ore, Ni content of nickeliferous iron ore		21,670	21,200	16,640	10,203 [r]	13,837 [3]
Metal, Ni content of ferronickel		17,700 [3]	18,700	18,600	8,269 [r, 3]	18,500
Silver, mine output, Ag content	kilograms	25,900 [3]	38,300	35,500	30,177 [r, 3]	32,000
Zinc, mine output, Zn content by analysis		16,414	20,700 [r]	20,300 [e]	18,126	19,967 [3]
INDUSTRIAL MINERALS						
Abrasives, natural emery[e]		8,000	8,000	8,000	8,000	8,000
Aggregates	thousand metric tons	8,000	7,500	8,500	6,500	6,500
Cement, hydraulic		10,852,000 [r]	12,035,077 [r]	11,361,397 [r]	8,649,322 [r]	9,000,000
Clays:						
Bentonite, crude, includes attapulgite and sepiolite		1,125,000	1,200,000 [r]	1,389,800 [r]	926,186 [r]	1,000,000
Kaolin, crude		50,000	40,000	4,360	--	--
Feldspar[e]		100,000	100,000	62,000 [3]	28,617 [3]	30,000
Gypsum and anhydrite[e]		850,000 [r, 3]	836,967 [r, 3]	865,000	730,000	750,000
Magnesite:[e]						
Crude		463,277 [3]	351,414 [3]	361,165 [r, 3]	380,834 [r, 3]	400,000
Dead-burned		58,000	56,000	58,000	48,000	48,000
Caustic-calcined		70,000	70,000	70,000	70,000	70,000
Huntite, crude		18,000	18,000	19,600 [3]	10,652 [3]	12,000
Nitrogen, N content of ammonia[e]		130,000	130,000	130,000	130,000	130,000
Perlite:[e]						
Crude		1,100,000	1,100,000	1,100,000	862,935 [r, 3]	900,000
Screened		550,000	550,000	500,000	398,451 [3]	400,000
Pozzolan, Santorin earth[e]		1,500,000	1,400,000	1,059,000 [3]	830,000 [3]	850,000
Pumice		850,000	900,000	828,000	381,000 [3]	400,000
Salt, all types		195,000	195,000	220,000	189,000 [3]	200,000
Silica[e]		125,000	100,000	64,521 [3]	37,905 [3]	40,000
Sodium compounds:[e]						
Carbonate		750	750	750	750	750
Sulfate		5,000	5,000	5,000	5,000	5,000
Stone:[e]						
Dolomite		60,000	60,000	60,000	60,000	60,000
Marble	cubic meters	250,000	250,000	347,526 [3]	255,516 [3]	250,000
Flysch		95,000	95,000	95,000	95,000	95,000
Quartz, microcrystalline	thousand metric tons	150	150	150	150	150

See footnotes at end of table.

TABLE 1—Continued

GREECE: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity[2]		2006	2007	2008	2009	2010[e]
INDUSTRIAL MINERALS—Continued						
Sulfur:[e]						
S content of mixed sulfide ore		250,000	250,000	264,299 [3]	225,054 [3]	230,000
Byproduct, natural gas and petroleum		160,000	165,000 [r]	120,000 [r]	142,000 [r]	140,000
Talc and steatite		250	200	200	200	200
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Lignite	thousand metric tons	64,520	73,092	64,521	62,730	64,000
Lignite briquets[e]		36,000	36,000	36,000	36,000	36,000
Gas:[e]						
Manufactured, gasworks	million cubic meters	15	15	15	15	15
Natural	do.	16	15	14	11	11
Natural gas plant liquids	thousand 42-gallon barrels	140	140	140	140	140
Petroleum:						
Crude	do.	668	660	478	628	600
Refinery products:[e]						
Liquefied petroleum gas	do.	7,575 [3]	8,000	8,000	8,000	8,000
Gasoline	do.	32,000	32,000	32,000	32,000	32,000
Naphtha	do.	8,400	8,400	8,400	8,400	8,400
Mineral jelly and wax	do.	20	20	20	20	20
Jet fuel	do.	16,000	16,000	16,000	16,000	16,000
Kerosene	do.	130	130	130	130	130
Distillate fuel oil	do.	42,000	42,000	42,000	42,000	42,000
Refinery gas	do.	4,800	4,800	4,800	4,800	4,800
Lubricants	do.	1,200	1,200	1,200	1,200	1,200
Residual fuel oil	do.	50,000	50,000	50,000	50,000	50,000
Bitumen	do.	3,000	3,000	3,000	3,000	3,000
Petroleum coke	do.	1,000	1,000	1,000	1,000	1,000
Other	do.	900	900	900	900	900
Refinery fuel and losses	do.	7,500	7,500	7,500	7,500	7,500
Total	do.	175,000	175,000	175,000	175,000	175,000

[e]Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. [r]Revised. do. Ditto. -- Zero.

[1]Table includes data available through February 1, 2012.

[2]In addition to the commodities listed, other crude construction materials are produced, but no basis exists for estimation of production.

[3]Reported figure.

TABLE 2
GREECE: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Alumina, Al_2O_3	Aluminium de Grèce S.A (AdG) (Mytilineos Holdings S.A., 53%)	Agios Nikolaos, Boeotia area	800
Aluminum	do.	do.	165
Asbestos	Hellenic Mineral Mining Co. S.A.	Mines at Zidani, near Kozani (closed)	100
Barite, $BaSO_4$	S&B Industrial Minerals, S.A. (Eliopoulos-Kyriakopoulos Group)	Milos Island (closed)	1
Bauxite	do.	Mines at Amfissa and Distomon, plants at Phocis and Itea	2,000
Do.	Delphi-Distomon S.A. (Mytilineos Holdings S.A.)	Mines at Amfissa and Distomon	800
Do.	Hellenic Mining Enterprises, S.A.	Mines at Aga Marina, Lamia	500
Bentonite:			
Crude	Mediterranean Bentonite Co. S.A. (Industria Chemica Mineraria S.p.A.)	Surface mines on Milos Island	20
Do.	Mykobar Mining Co. S.A. (Silver & Baryte Ores Mining Co. S.A.)	Mines at Adamas, Milos Island	300
Do.	do.	Plants at Adamas, Milos Island	200
Do.	S&B Industrial Minerals, S.A. (Eliopoulos-Kyriakopoulos Group)	Mines at Adamas, Milos Island	600
Processed	do.	Plant at Voudia Bay, Milos Island	400
Cement	Halkis Cement Co. S.A. (Lafarge Group)	Micro-Vathi plant, west-central Euboea Island	3,000
Do.	Halyps Cement S.A. (Ciments Français Group)	Paralia Aspropyrgos plant, Athens	800
Do.	Heracles General Cement S.A. (Lafarge Group)	Plants at Halkis Evia, Milaki Evia, and Volos	9,600
Do.	Titan Cement Co. S.A.	Elefsis plant, Athens area	400
Do.	do.	Kamari plant, Boeotia	2,600
Do.	do.	Patras plant, northern Peloponnesus	1,900
Do.		Salonica plant, Salonica	1,650
Chromite	Financial-Mining-Industrial and Shipping Corp. (FIMISCO)	Tsingeli Mine, Volos	25
Ferroalloys, ferronickel, Ni content	Larco G.M.M. S.A.	Larymna metallurgical plant	25
Gold, Au in concentrate kilograms	Hellas Gold S.A. (European Goldfields Ltd.)	Kassandra Mines [Olympias (closed) and Stratoni]	5,000
Gypsum	Lava Mining and Quarrying Co. S.A.	Altsi, Crete Island	500
Do.	Titan Cement Co. S.A.	do.	280
Hunite/hydromagnesite	Microfine S.A.	Mines in Kozani Basin	100
Lead, mine, Pb in concentrate	Hellas Gold S.A. (European Goldfields Ltd.)	Kassandra Mines [Olympias (closed) and Stratoni, northeastern Chalkidike]	30
Lignite	Public Power Corp. (PPC) (Government)	Aliveri Mine, Euboea Island	420
Do.	do.	Megalopolis Mine, central Peloponnesus	7,000
Do.	do.	Ptolemais Mine, near Kozani	28,000
Magnesite, concentrate	Grecian Magnesite S.A. (GM)	Mine and plant at Gerakini and Kalives, Chalkidiki, northern Greece	200
Manganese, battery-grade MnO_2	Eleusis Bauxite Mines Mining, Industrial and Shipping S.A. [National Bank of Greece (OAE)]	Nevrokopi, Drama	10
Marble, slab and tile cubic meters	Aghia Marina Marble Ltd.	Various areas of northern Greece	NA
Do. do.	Michelakis Marble S.A.	Kavala	NA
Do. do.	Gourlis Group	Quarries at Levadia, Neurokopi, and Tiseo	NA
Natural gas million cubic meters per day	Public Petroleum Corp.(PPC) (Government)	Prinos offshore gasfield and oilfield, east of Thasos Island	125
Nickel, ore	Larco G.M.M. S.A.	Agios Ioannis Mine, near Larymna	700
Do.	do.	Evia Mine, near Larymna	1,500
Nitrogen, N content of ammonia	Phosphoric Fertilizers S.A.	Nea Karvall	150

See footnotes at end of table.

TABLE 2—Continued
GREECE: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Perlite		S&B Industrial Minerals, S.A. (Eliopoulos-Kyriakopoulos Group)	Mines on Kos and Milos Islands; plant at Pireaus	650
Do.		Otavi Minen Hellas S.A. (Otavi Minen AG)	Milos Island	150
Do.		Bouras Co.	Kos Island	50
Petroleum, refined	42-gallon barrels per day	Hellenic Aspropyrgos Refinery S.A.	Aspropyrgos	95,000
Do.	do.	Motor Oil (Hellas) Corinth Refineries S.A.	Aghii Theodori, Corinth	170,000
Do.	do.	Petrola Hellas S.A.	Eleusis	100,000
Do.	do.	Thessaloniki Refining Co. A.E.	Thessaloniki	76,000
Pozzolan (Santorin earth)		Lava Mining and Quarrying Co. (Heracles General Cement Co.)	Xylokeratia, Milos Island	600
Do.		Titan Cement Co. S.A.	do.	300
Pumice		Lava Mining and Quarrying Co. (Heracles General Cement Co.)	Yali Island	1,000
Quartz (microcrystalline)		do.	Adamas, Milos Island	150
Steel, crude		Halyvourgia Thessalias S.A. (Manessis Bros. and Voyatzis S.A., 65%, and National Investment Bank for Industrial Development, 35%)	Steelworks at Volos	1,500
Do.		Sidenor Steel Products Manufacturing S.A.	Steelworks at Thessaaloniki and Almyros	2,800
Do.		Halyvourgiki, Inc.	Steelworks at Eleusis	1,200
Do.		Hellenic Steel Co.	Steelworks at Thessaloniki	1,000
Do.		Corinth Pipeworks S.A (CPW)	Steelworks at Thisvi	700
Zeolite		S&B Industrial Minerals, S.A. (Eliopoulos - Kyriakopoulos Group)	Mine at Pendalofos; plant at Ritsona	100
Zinc, mine, Zn in concentrate		Hellas Gold S.A. (European Goldfields Ltd.)	Kassandra Mines (Olympias and Stratoni), northeastern Chalkidike	30

Do., do. Ditto. NA Not available.